2004 Waste Tire Management Program Report

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Indiana Department of Environmental Management
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Introduction

The Rubber Manufacturers Association estimates that each year, one waste tire is generated for every American. Using this information, Indiana generates about 6 million waste tires per year, with about 6.5 million additional tires inventoried at illegal stockpiles. Large accumulations of whole tires pose a serious threat to public health by providing breeding grounds for mosquitoes that spread diseases and a fire threat which could damage the environment, including air pollution and runoff to nearby water resources.

In 1991, as directed by the state legislature, the Indiana Department of Environmental Management established a Waste Tire Task Force to address the problem of increased illegal waste tire stockpiles. Recommendations from the Waste Tire Task Force led to the creation of the Waste Tire Management Program. To support the program, a Waste Tire Management Fund was created from a tire fee charged by retailers on the sale of new tires and new vehicles.

Since the creation of the program, Indiana has been successful in remediating many waste tire dumps and abandoned tire piles, and granting financial assistance for market research and development. However, with the volume of waste tire material generated annually, these current efforts may not be enough.

This annual report provides an update to the comprehensive Waste Tire Management Program Report (released February 2004) of activities during Fiscal Year 2004 (July 1, 2003 – June 30, 2004). It includes information on the status of the fund, IDEM tire management programs supported by the fund, and future challenges Indiana faces with waste tire management.

The Waste Tire Management Fund

The Waste Tire Management Fund was established by IC 13-20-13-8 to support Indiana's Waste Tire Management Program. The majority of funding comes from a 25 cents per tire fee collected on the sale of new motor vehicle tires (IC 13-20-13-7). The fee is handled by vehicle dealers or replacement tire retailers and is remitted to the state. The Waste Tire Management Fund may be used for the remediation and removal of improperly disposed waste tires and for grants for waste tire market development activities.

Historically, the funding was split between the Indiana Department of Environmental Management (for removal and remediation projects) and the Indiana Department of Commerce (for market development loans and grants.) In 2004, IDEM and IDOC developed a Memorandum of Understanding (MOU) in an effort to coordinate use of the fund to ensure that the purposes of the fund are accomplished and that the fund is not depleted by potentially conflicting limits on agency access to the fund.*

Currently, the fee revenue and expenditures from the waste tire fund for tire management, cleanups and market development incentive are as follows for fiscal years 2003 and 2004:

Fiscal Year	Fee Revenue *	IDOC grants	IDEM Executed Contracts for Cleanups	IDEM Grants
2003 (7/1/02-6/30/03)	$1,079,300	$17,520	$111,863	$ 90,000
2004 (7/1/03 - 6/30/04)	$1,612,000	$ 0	$910,216	$276,240

(*Annual revenue collections reported in thousands on the Department of Revenue Web site at: <www.in.gov/dor/reference/report/04pdf/descriptions.pdf>. Before IDOC and IDEM negotiated the MOU, some of the funding for grant-awarded projects utilized Solid Waste Management Fund dollars.)

For more information regarding the Waste Tire Task Force recommendations, including financial proposals and a history of the funding, see the 2003 report online at: <www.IN.gov/idem/ctap/wastetire/index.html>.

The following sections of this report detail the management programs supported by this fund, including monetary incentives and public education to promote the environmentally sound use of waste tires, and the expenditures involved with compliance regulations and remediation projects.

Waste Tire Management Programs

IDEM is responsible for regulating waste tires across the state. Through the framework of the Waste Tire Management Program, the department oversees waste tire cleanups of existing stock piles, compliance issues for businesses, and prevention of further illegal dumping. The department is also authorized to enforce waste tire removal and remediation. IDEM also offers grants to entities interested in further investigation and innovation of waste tire reuse opportunities.

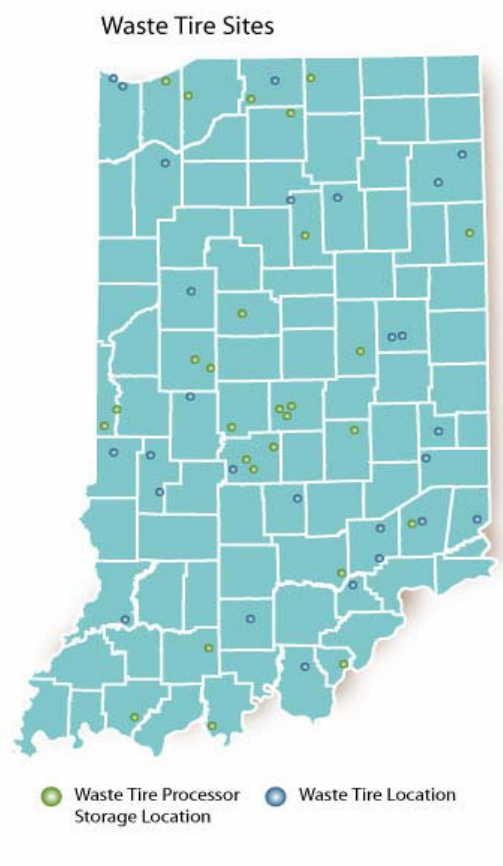
Illegal Waste Tire Dump Cleanups

In 2003, an estimated $133,090 was spent by IDEM on tire cleanups. These sites included Martin Myers in Howard County, removing 132 tons of waste tire material; Thomas Painter in Henry County, removing 119 tons; and Prime Battery in Madison County, removing 133 tons. IDEM has initiated the cleanup of 8,750 tons of tires (equal to 700,000 passenger tires) at a facility in Vigo County, with future cleanup sites for 2004 including: Hoggatt Trucking/Wabash Valley Recycling, R & B Sales, Roland Dump, Bob Romas, KMC Waste Tire Co., and Thomas Erwin.

The map below illustrates the locations of existing tire sites within the state which accumulate large numbers of stockpiled tires.

Waste Tire Sites Per County

County	# Waste Tire Sites
Allen	2
Brown	1
Clay	1
Dearborn	1
Delaware	1
Fayette	1
Franklin	1
Fulton	1
Henry	1
Howard	2
Jasper	1
Jennings	2
Knox	1
Lake	1
Montgomery	1
Morgan	2
Orange	1
Putnam	1
Ripley	2
St. Joseph	1
Tippecanoe	1
Vigo	1
Wabash	1
Total	30



While some facilities are properly managed by tire processors registered with IDEM, others have become dump sites. About 5 million tires from Indiana waste tire stockpiles have been cleaned up; IDEM estimates through routine compliance surveys that more than 6.5 million additional waste tires are stockpiled at registered processing facilities throughout the state, awaiting an end use or disposal. However, that number does not include the 5 million to 7 million tires in illegal waste tire dumps and abandoned stockpiles that have not yet been remediated. Other waste tire site cleanups completed around the state include McIntosh, Warren County; Chusey, Sullivan County; and, Joe Redd, Union County.

IDEM has taken civil actions against the following waste tire facilities; final resolutions of the cases are still pending:

1) CR3 of Indiana, a/k/a Dillon Environmental Resources, LLC, Muncie, Delaware County, for a large tire fire in August 2003. Court action was initiated August 2003;

2) Bailey's Recycling Group, South Bend, St. Joseph County. The site is currently under a court order compliance schedule to remediate the site and IDEM

is monitoring the progress. Court action initiated was initiated in November, 2003;
3) Hoggatt Trucking Inc., a/k/a Wabash Valley Recycling Inc., Terre Haute, Vigo County. The site is no longer operating per a court order. IDEM has awarded a contract to perform a State cleanup of the site using waste tire fund monies. Court action was initiated in February 2004;
4) Mobile Scrap Tire Processing and Disposal, Lafayette, Tippecanoe County. The site is no longer operating per court order. IDEM is currently working with the property owner of the site (CSX) to get the waste tires remediated. Court action was initiated October 2003;
5) KMC Waste Tire Company Inc., Osgood, Ripley County. The site is no longer operating per court order. IDEM has awarded a contract to perform a State cleanup of the site using waste tire fund monies. Court action was initiated January 2004; and,
6) Stewart Recycling Inc., Monroe City, Knox County. The site is currently under a court order compliance schedule to remediate the site and IDEM is monitoring the progress. Stewart was originally under an agency adopted administrative agreed order (AO) from March 2000 to remediate the site. The facility's failure to comply with the adopted AO resulted in the case being referred to the Attorney General's Office. This court action was initiated November 2003.

<u>Business Compliance: Registration of Waste Tire Transporters, Processors and Storage Sites</u>

Indiana Statutes IC 13-20-13 and 14 and the Indiana Solid Waste Management Board Rule 329 IAC 15 set forth requirements for the collection, storage, transportation, processing, and disposal of waste tires. These businesses must register with IDEM and keep track of tires as they move from generator to final end use. Limits on the storage of waste tires are set by IDEM and the Indiana State Fire Marshal to prevent large accumulations of waste tires.

General Guidelines

329 IAC 15 provides standards for waste tire transportation, processing (to include cutting, shredding or grinding of waste tires), storage and disposal. The rule is intended to prevent large accumulations of waste tires and to track the movement of tires from the generator to the final end use or disposal facility.

Individuals wishing to conduct business in waste tire management must first obtain a certificate of registration from IDEM's Office of Land Quality for each regulated activity. All registrations are valid for five years. Restrictions on both indoor and outdoor storage limit the number of tires that generators, haulers, and processors may accumulate. State Fire Marshal rules regarding tire pile size limits and fire prevention measures must be followed, and processing and storage site managers must identify emergency contacts and procedures in their site contingency plans.

Copies of the registration forms for transporters, processors, and storage facilities, as well as annual report and manifest forms may be found online at: <www.IN.gov/idem/land/permits/forms/index.html>.

Waste Tire Generators

Major waste tire generators include vehicle retailers and maintenance facilities, transportation companies, dealers and retreaders, and automotive salvage operations. In Indiana, the number of tire retailers is estimated to be close to 1,000, according to the Association of Tire Dealers and Retreaders. Currently, 250 retailers are officially registered with the association, which fully supports best environmental management practices by its members.

Although waste tire generators are not required to register with IDEM, IC 13-20-14 sets certain guidelines for tire retailers. First, they must accept the same number of waste tires replaced by new tires purchased at their establishment by a consumer. A handling fee or disposal charge is routinely collected by the dealer for this service, in addition to the 25 cent retail tire fee. Second, a generator of waste tires must dispose of these tires at a registered facility authorized to handle the waste tires. Third, anyone who is the generator of 12 or more tires per year is required to maintain an annual record of waste tire manifests provided by a registered waste tire transporter. Generators must keep these records on site for one year to show that they are properly managing waste tires through a registered transporter.

Waste Tire Transporters

Waste tire transporters are required to pay a $25 application fee in order to register. Once registered, transporters must pay a $25 annual operating fee. 329 IAC 15-4-14 also requires transporters to annually report the number of waste tires handled. In order to ensure all waste tires handled are managed properly, 329 IAC 15 was amended in 1999 to include provisions that a waste tire transporter shall maintain financial assurance in the amount of $10,000. With those rule revisions, the number of tire transporters dropped from 250 recorded in 1999 to 89 recorded in 2003. A list of transporters currently registered with IDEM may be found online at: <http://www.in.gov/idem/land/sw/permitting/reg_wst_tire_trans.html>.

Waste Tire Processors

There are 30 waste tire processors currently registered in Indiana. The application fee to register a waste tire processing facility is $200. There is no annual fee for waste tire processing facilities. 329 IAC 15-3 calls for annual reporting of the number of tires handled, maintenance of a record of tire sources (a manifest), and development of a facility contingency plan for dealing with emergencies. This chapter also requires processing operations to drain water from tires on the day they are received and process them within seven days to prevent water collection and the threat of mosquitoes spreading disease.

Waste Tire Storage Sites

Only three waste tire storage sites are currently registered in the state of Indiana. The application fee to register a waste tire storage facility is $500. The annual operating fee is also $500. Storage sites are required to register waste tire storage beyond the outside accumulation of 1,000 or more waste tires, and must include inside accumulations of 2,000 or more waste tires. Enclosed storage for less than 30 days may be exempt as may storage in an Indiana Department of Transportation-approved fully enclosed trailer licensed to travel on the highway.

A list of processing and storage facilities may be found online at: <http://www.in.gov/idem/land/sw/permitting/waste_tire_processors_and_storage.html>.

Waste Tire Grants

The Indiana Department of Commerce offers grants and loans to stimulate market interest, allotting monies for machinery, research, and recycling initiatives regarding waste tires. IDEM also provides outreach in conjunction with IDOC on waste tire market development. As part of this effort, IDEM and IDOC have offered funding for waste tire grants. In general, the majority of Indiana waste tires are collected for processing, and less than 25 percent of these tires are reused.

IDEM's Office of Pollution Prevention and Technical Assistance announced its second round of Waste Tire Grants in December 2003. The grants were available to businesses, schools, not-for-profits, and local units of government to use waste tires acquired in Indiana for projects in the following categories:
-*Civil Engineering Field Reuse* involves using waste tires as part of an IDEM-approved civil engineering beneficial reuse project, including roadway or surface lot drainage bases, residential on-site waste water septic field drainage systems, and embankment or bridge abutments.
-*Recreational Field Reuse* involves using waste tires as part of an IDEM-approved recreational beneficial reuse project, including sports tracks, hiking/biking trails, and marine or boat docks.
-*Research and Development* involves exploring the use of waste tire material in a high-value added product and finding markets for that product.
-*Tire Derived Fuel Trial and Implementation* involves utilizing waste tires as an alternative or supplemental fuel in energy generation applications.

Promoting the use of shredded tire chips requires coordination between several agencies responsible for developing or monitoring design and construction standards. Listed below are the tire grant demonstration projects approved in May 2004. These projects are intended to promote cooperation between agencies and to develop needed guidance for future projects involving waste tires.

- Purdue University: civil engineering research on design and construction of county highways utilizing tire chips or shreds which could provide the Indiana Department of Transportation (INDOT) special provisions for local government projects.

- Purdue University: civil engineering research in cooperation with INDOT to test the use of tire chips as possible backfill mix in future highway overpass walls.
- Indiana Geological Survey: research in conjunction with the Indiana State Department of Health (ISDH) on the performance of tire chips as a drainage aggregate in residential on-site sewage disposal systems with the potential to allow substitution for mineral aggregate as an approved use.
- Valparaiso University: demonstration projects for a new formulation of rubber modified asphalt pavement to be installed as part of a new facility service drive and parking area, to provide useful performance testing information for INDOT.
- Indianapolis Parks Department: an outdoor recreation court facility and new parking area using a new formulation of rubber modified asphalt, to provide useful performance testing information for INDOT.
- Three high schools were approved this grant round for crumb rubber applications to natural turf athletic fields to test the level of benefits to concentrating less rubber in the highest traffic areas for lower cost while still achieving most of the benefits. Duneland High School in Porter County, Noblesville High School in Hamilton County, and Terre Haute South High School in Vigo County received funding for these projects.

The amount of grant funds approved this round was $276,240.00. The civil engineering research projects are targeting construction in 2005 and final reports in early 2006. One additional civil engineering project funded by IDOC will also document installation methods and performance of tire chips in residential on-site sewage disposal drainage systems.

Beneficial Reuse

Solid waste management regulations provide a means under 329 IAC 10-3-1(13) for IDEM to allow, by prior written approval, beneficial uses of waste tires. This approval may be given when an applicant shows that the use of this material provides a real benefit and is not a means to avoid proper disposal, and does not pose a threat to human health or the environment. Several tire products have been in common use for the last 5 to 10 years and are now accepted as legitimate products processed from waste tires. Such products include crumb rubber, playground cover, and one inch to two inch chips utilized as a fuel in permitted boilers (known as TDF—tired derived fuel). Two inch chips also are being used as a lightweight construction material in highway embankments. By demonstrating these beneficial uses of tire chips and standard-sized shreds, more markets could open in other construction applications.

The major problem facing IDOC and IDEM is the development of strong markets now. Without a steady demand there is no end use, demand will only come when the value of the material is demonstrated.

Markets for Processed Tires

In May of 2004, U.S. EPA Region 5 in a cooperative effort with several state waste tire management programs compiled a summary of waste tire piles in the Great Lakes region and mapped the locations and volumes of about 500 sites. A goal was established under U.S. EPA's Resource Conservation Challenge to clean up 55% of these stockpiled tires by 2008. This renewed regional interest in cleaning up waste tire stockpiles may offer the chance to share reuse ideas among the states. It may also be possible that this large volume of tire material will entice a waste tire reuse or recycling industry to establish a facility in the region. For more information, visit the EPA Region 5 website at: <www.epa.gov/reg5rcra/wptdiv/solidwaste/tires/GreatLakesTires.pdf>.

ionally, beneficial uses of processed waste tires are reported to be primarily in tire derived fuel, civil engineering applications, and ground rubber products. The greatest potential reuse for tires mixed with soil and debris collected from stockpiles may be in civil engineering applications which can utilize tire shreds of various sizes as a drainage layer in construction projects.

Current Markets for Waste Tires in Indiana

The following explains Indiana's strides toward effective reuse.

Landfill Cover and Disposal: The most common end use for waste tires in Indiana is landfill alternative daily cover. Many more waste tires are cut into pieces and disposed in Indiana landfills.

Civil Engineering Applications: Civil engineering applications include using tire pieces ranging in size from 2 to 12 inches as a construction base for roadways, surface lots, and drainage lines. These applications provide the second largest market for waste tires in the United States, consuming 14.2 percent of processed waste tire material. Although it has not been aggressively pursued, this market has the greatest potential for growth in Indiana. Tire chips are beneficial, lightweight fill that can be produced by many of the large tire processors in the state. Civil engineering projects have the potential to use a large volume of processed tire material. This potential market for waste tire material exists everywhere road construction or maintenance is being performed, as long as the distance from a tire processing facility is reasonable. Civil engineering applications are already in use in the states surrounding Indiana.

Rubber Modified Asphalt: A new formulation of fine ground tire rubber plus a reactive modifier was blended into an asphalt mix at two standard Indiana plants this summer. The demonstration projects are part of the IDEM waste tire reuse program intended to provide test sites for evaluating the new process. The initial reactions by the companies who mixed and applied the asphalt, as well as the facilities that now have a new parking area and recreational courts paved with this new asphalt mixture, were favorable. Previous testing indicated that there was enhanced performance with the use of this material as a binder, which improved resistance to rutting and cracking.

Tire Derived Fuel (TDF): TDF is a major market in several surrounding states (and the largest national market for waste tires at about 41 percent). TDF has been pursued as a waste tire market in Indiana. While IDOC administered the waste tire grants, funding was awarded for test burning of TDF. Several test burns have produced encouraging results, but currently projects are not being implemented due to the complexity and costs of the technical modifications to permits or the physical change to the coal ash including increased metals like zinc.

Ground Rubber: Nationally, ground rubber applications account for 12 percent of tires sent to a market annually. Playground and athletic field applications have been the most popular uses of ground rubber from waste tires. The first round of Waste Tire Grants issued by OPPTA in 2003 went exclusively to athletic field applications, and several more athletic field projects were funded in 2004. With the 2002 loss of the CR3 tire processing facility in Muncie, Indiana has no in-state crumb rubber supplier.

Landscaping uses: Landscaping applications for waste tire material is a small but growing market for Indiana tires. One tire processor in Indiana is exporting tire shreds as feed stock and importing products such as playground cover, rubber mulch, and other tire derived landscape products from a tire processor in a neighboring state.

Regional Tire Programs and Markets

Waste tire programs across the nation vary greatly. In general, 34 states have a per tire fee. Two programs collect a per tire fee as low as 25 cents (Indiana and Kansas); others collect a fee as high as $2.50 per tire. Many states differentiate between car tires and truck tires. For example, Arkansas charges $2 per passenger tire, but $4 per truck tire. Five states have an alternate tire fee tied in with vehicle registration and/or vehicle title, with Iowa and West Virginia charging the highest fees - $5 for titles. Indiana's neighboring states charge the following: Michigan – 50 cents per tire on vehicle titles; Ohio -- $1 per tire; Kentucky -- $1 per tire; Wisconsin -- $2 vehicle titles; and Illinois -- $2.50 per tire.

U.S. EPA

The federal government has information on waste tire product stewardship, including the latest product development, resources, and international, federal, regional, local, and industry initiatives. For more information, visit the U.S. EPA's Web site at: <www.epa.gov/epr/products/tindust.html>.

Challenges for the Future

IDEM has established multiple goals to address waste tire management problems in Indiana. Those goals are to increase markets for waste tires, increase compliance and enforcement efforts, clean up current illegal dump  s, and provide proactive compliance outreach to the waste tire industry. However, current efforts may not be enough. IDEM's recent compliance and enforcement evaluations of the state's 32 waste tire processors indicate there are significant concerns with illegal storage of large volumes of whole waste tires and shredded tires. As such, IDEM faces the additional

challenge of thoroughly examining the regulatory structure for improvements that will assist in preventing future illegal waste tire storage.

Continuing Focus on Waste Tires

- IDEM will continue to evaluate its existing approaches, authorities, and efforts to properly manage waste tires in Indiana for necessary changes.

- IDEM will continue to work with IDOC and local governments to encourage the purchase of products made from recycled waste tires as well as the use of waste tires in civil engineering projects.

- IDEM will continue to work with INDOT to promote additional testing for transportation engineering applications and establishment of standards supporting the use of tire materials in local road projects. INDOT also will work on special provisions allowing the use of tire chips in other appropriate applications, such as in lightweight fill base in embankments

- IDEM will continue working with ISDH and will work more effectively with county health departments to fight increasing tire piles which are perfect breeding locations for mosquitoes.

- IDEM, ISDH, and IDOC will continue work on pilot projects for engineering application in septic leach fields. IDEM will report the impacts of ground water testing in this application once the septic system grant, awarded in 2004 to Indiana Geological Survey, is completed. IDEM is also in the processes of drafting a non-rule policy to provide a generic approval for use of chipped tires in on-site sewage systems

- IDEM will report tire stockpiles to the State Fire Marshal's Office, working with that office on compliance and enforcement issues regarding illegal tire dumps and stockpiles.

Working Closely with Business and the Public Sector

- IDEM will continue to work with businesses and IDOC to encourage the development of viable end markets for waste tires. The state will commit to explore beneficial reuse opportunities that utilize the maximum amount of Indiana tires.

- IDEM and IDOC will continue to work with prospective Indiana companies and institutions to explore opportunities to utilize waste tires in an environmentally sound manner such as TDF in their combustion processes. The largest national use for waste tires is tire derived fuel. It is estimated that one Indiana cement kiln, for example, could use 1 million to 3 million tires annually.

- IDEM will increase outreach efforts to tire processors, transporters, and storage site operators to educate them on compliance issues and best management practices.

- IDEM will work to encourage more grant applications for schools to develop gym floor and athletic field applications.

- IDEM will work to offer research grants to universities to develop technical data reports on various engineering applications to assist in providing more opportunities for end uses of tires.

- IDEM is exploring the development of tire management consumer awareness materials for display at dealer business locations and Association trade shows. This outreach program may include a survey of tire retailers around the State to determine the best methods of improving retailer compliance with current waste tire management practices and requirements.

Conclusion

waste tire management system in Indiana can benefit from continued investment in and development of research and broader-based market development grants, as well as administrative support for cleanups and enforcement authority. Together with other state agencies, lawmakers, industry, and the public, the Indiana Department of Environmental Management will work to reduce the number of waste tire dumps and illegal tire stockpiles, making the state a cleaner and healthier place to live.